0624S on 1027

A SIMPLE PETRI DISH FOR DETECTION OF MICROORGANISMS IN LIQUID SAMPLES

Background

Many liquids, both in the open environment and in the body, may host microbial growth. In many cases, we are interested in knowing the kinds of microorganisms present in a liquid sample; in other cases it is sufficient to estimate their overall concentration. In order to ascertain microbial growth in liquids, two general methods may be used: (i) a small sample (generally 0.1 ml) is spread over the surface of a gelled agar plate until it is adsorbed; following incubation, microbial colonies may be visible on the agar surface; (ii) the sample may be mixed with hot agar and the mixture then poured into an agar plate and allowed to gel; following incubation, microbial colonies may be visible throughout the mass of the agar.

Both the above processes have the disadvantage of requiring agar media which generally have a short shelf life (up to two months, depending on the particular medium). The first method is limited to the sampling of very small volumes; the second is time-consuming.

Description of the envisioned product

We have developed a dry, self-contained system for cultivating microorganisms from liquid samples. The system is based on a sealable Petri plate containing a transparent fabric, impregnated with gelling agent and growth medium. In order to use the dish, the liquid sample is simply applied to the fabric surface. The dish is then sealed to prevent evaporation, and incubated as required. The major advantages are long shelf life, transparency, simplicity of use, and the relatively large volumes (ca. 0.75 ml) which can be sampled. Moreover, the thin fabric layer containing the microbial growth can be dried and kept for future reference.

To date, three prototypes have been prepared: plates for total enumeration of microorganisms (total count), plates for enumeration of yeasts (Sabouraud), and plates for assessment of dental caries potential, based on Streptococcus mutans (Mitis-Salivarius + Bacitracin).

Potential Applications

Total count: Suitable for home, field and factory testing of water supplies; routine industrial testing of juices, pharmaceutical and cosmetic products for microbial contamination, home testing of urine and peritoneal dialysis effluent.

Sabouraud: Highly suitable for measuring salivary yeast levels (oral yeast levels have considerable diagnostic importance as indications of lowered immunity), gynecological tests, beverages, milk products, pharmaceutical and cosmetics liquids, creams and pastes.

Mitis-Salivarius + Bacitracin: Highly suited for sampling saliva for the presence of S. mutans, a bacterium highly associated with dental caries development.

Potential Consumers

Food, pharmaceutical and cosmetics industries, dental and gynecological clinics, army units, home use, high-school instruction, etc.